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made a sort of picnic or field day. The women bring supplies of cassava bread and peppers, and build fires near the site of the poisoning for the purpose of cooking the fish, part of the catch being eaten as part of the picnic lunch. Usually the men have preceded the women to the spot early in the morning, built a fence across the water downstream and collected a supply of haiari root from which they have removed the bark and which they have split into shreds. Each man has also cut a club or beater of yarriyarri wood two and one-half to three feet long, with a smooth handle fitted to the hand and a head of larger diameter. They bring the shredded haiari and the clubs to a point in the stream where semi-submerged logs or rocks arise from the water, which, below this point, must be relatively quiet and sluggish so that the poison is not too quickly borne away. Each man takes an armful of haiari and his club and chooses a suitable rock or log on which to pound the haiari, while he stands in the water alongside. In the meantime the women and children have deployed downstream, armed with cutlasses and knives with which to kill the stupefied fish. Each man then takes a small bundle of his haiari root and begins systematically to pound it on the rock or log which he has chosen, dipping it frequently into the water to free the juice until the haiari is exhausted of its poison. The juice when first freed has a whitish milky appearance which clouds the water. It seems to be heavier than the water itself and turns a rusty red with age. In the shallows of the stream which has recently been poisoned one sees the reddish viscid remnant of the haiari which has collected on the bottom. There seems to be some mystery concerning the effects of the poison on the fish and the opinion among the Caribs is divided as to whether the haiari would actually kill fish or merely stun them. They become sluggish and tend to float belly upward on the surface, but I have noticed that a fish "poisoned" by haiari, even when apparently dead, quickly revives when put into fresh unpoisoned water. On the other hand, the Indians also use the juice of the haiari to poison the ground around the roots of the tobacco plants, in the belief that it poisons the root grubs which kill the plants.[1]

[1] See Roark, R. C., "Rotenone." *Industrial and Engineering Chemistry*, Vol. 25, June 1933, pp. 629–642: "Rotenone, $C_{23}H_{22}O_6$, a colorless, odorless, crystalline constituent of certain tropical fish-poison plants, is thirty times as toxic as lead arsenate as a stomach poison to silkworm, fifteen times as toxic as nicotine as a contact insecticide upon bean aphids, and twenty-five times as toxic as potassium cyanide to goldfish, and yet is harmless to birds and mammals

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226 252 The women and children, along the banks or in the water, kill the apparently stupefied fish by slashing them with their cutlasses and knives. The fish are then put in carrying baskets and carried to the picnic spot. For the picnic lunch the smallest specimens only are eaten, usually being roasted over the fire on the ends of fresh green sticks, in the same way in which we roast picnic frankforters. The small fish, from which the heads and scales have not been removed, are then put with a small pepper into a sort of sandwich of cassava bread and eaten with much relish and gay talk, [264] punctuated by the necessity of inserting the fingers in the mouth to remove those bones which cannot be chewed and swallowed. The larger fish are deprived of their scales with the help of a piece of wood which has been sharpened to a chisel edge. Then they are disembowelled, decapitated, and split sagittally along the back without removing the vertebrae or other bones. They are placed in carrying baskets with moist leaves and carried back to the settlement. If the people have a supply of trade salt, a number 251 of slits are made parallel to the ribs and the meat is rubbed thoroughly with salt and placed out in the sun to dry. If there is no salt the meat is slit in the same way and dried over a babracot.

● 278 226 The wa'u poison is hacked into small chips and these are thrown into the water. Only the heart of the tree is used. The chips are thrown into the water in the evening, several hours being required for the poison to take effect. The next morning the dead fish may be collected. The wa'u is apparently less successful than haiari and is only used in the absence of the latter.

The poison made from konami is called sokoi. The konami leaf is pounded into a mash which is mixed with grated, unsqueezed,

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eating it. . . Rotenone is a constituent of the following plants, comprising seven genera of the bean family (Fabaceae or Leguminosae): *Cracca cinerea, C. virginiana, Derris Chinensis, D. elliptica, D. malaccensis, D. potyantha, D. uliginosa, Lonchocarpus nicou* (cube), *Lonchocarpus sp.* (haiari), *L. chrysophylus* (?) (Nekoe), *Millettia, Mundules suberosa, Ormocarpum, Spatholobus roxburghii*. . . Rotenone is now known to be harmless to mammals when taken by mouth, but many early writers on derris spoke of its dangerous poisonous qualities. . . Buckingham in 1930 made numerous tests on dogs, cats, pigs, sheep, cows, chickens with rotenone and with the ether extract of derris. He concluded that, when administered by mouth, pure rotenone produced no visible effects in dogs, cats, pigs, or sheep in doses (for dogs) up to one grain per pound of body weight and expressed the opinion that even larger doses would be harmless." Roark summarizes other experiments showing the non-toxic effects of rotenone on mammals, its extremely toxic effects on fish, and its variable effects on various species of insects. It is concluded that rotenone, the poisonous principle of haiari, is a stomach poison, although the physiological effects are not described. On this subject see also Killip, E. P. and Smith, A. C., "The Identity of the South American Fish Poisons, 'Cube' and 'Timbo'." *Journal of the Washington Academy of Sciences*, Vol. 20, No. 5, March 4, 1930, pp. 74–81; Roark, R. C., "Excerpts from consular correspondence relating to insecticidal and fish-poison plants." U. S. Department of Agriculture, Bureau of Chemistry and Soils, Insecticide Division, June 1931; Killip, E. P. and Smith, A. C., "The Use of Fish Poisons in South America." *Smithsonian Report for 1930*, pp. 401–408, Washington, 1931.

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bitter cassava, and baked into small balls which are dropped into the water where they are swallowed by the fish. A fish which has been gullible enough to swallow this fraud soon loses control and floats to the surface where it is captured by the fisherman.

I did not observe nor hear of the use of fish traps or of nets, although these appliances are reported from other parts of the colony.

The fish most commonly used for food are the haimara (*Hoplias macrophthalmus*), huri (*Hoplias malabaricus*), yarrau (*Hypostoma* sp.), low-low (*Silurus* sp.), pirai (*Pygocentrus*), cartabak (?*Tetragonopterus*). The moracot, so well known for its fighting tendencies and flavor in other parts of the colony, is found only in the tidewater portions of the Barama. Hook baits include spiders, calabash pap, cassava bread, and various worms.

Among other food products obtained from the streams are sting-ray (caught on hooks and tasting somewhat like tripe when cooked), small periwinkles or "snails" of two sizes called respectively mari (small) and kue (large), frog eggs.

Vegetable Foods. Every household has its own agricultural field lying at some distance from the house clearing. The slash-and-burn method is used in agriculture, a method which, in the absence of artificial fertilizers, requires the opening up of a new field usually every third year due to the exhaustion of the soil.

I do not intend here to enter into a detailed description of agricultural practices, inasmuch as similar procedures to those followed by the Caribs have been described by Roth, Schomburgk, Farabee, and others. When choosing a spot for a field, the first criterion is good drainage, and for this reason the fields are frequently referred to as "cassava hills." Associated with the topographical position in the problem of drainage is the character of the soil. The proper soil is called "white dirt" and takes its color from the large amount of sand mixed with the loam. First the underbush is cleared away with cutlasses and heaped into piles. Then the trees are cut down with iron axes obtained in trade. For felling large trees with heavily buttressed feet, scaffolds of small logs tied together with bush rope are built ten to fifteen feet above the ground, on which men may stand to do the chopping.

The tree felling is usually done during the rainy season and the movable logs and brush piled into heaps. Some time after the advent of the dry season, the logs and brush are burned, after

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671 free will, that is "with intent," the origin of the cause can be reached and compensation extracted.

681 To obtain satisfaction from one who has committed an offense against him, a man may have recourse to one or more of the following media of action: (1) poisoning, (2) sorcery, (3) violence, (4) kanaima. And the group may resort to (5) violence, (6) ostracism and (7) exile to rid itself of an undesirable member. The first four types of punishment may be called private, the last three public. Again, private violence and all group methods are overt, whereas poisoning, sorcery, and kanaima are secret.

• 278 Poison may be administered either in food or drink. The most common practise is said to be to insert some of the poison in the cassiri or paiwari when the drink is handed to the intended victim during one of the periodic drinking bouts or sprees. The liquor is passed to guests at a drinking bout in calabashes, and the approved technique of poisoning consists of placing some of the poisonous material under one of the finger nails, which in the act of passing the calabash is allowed to slip into the liquor.[1]

Varieties of poison are as follows:

(a) The most dangerous poison is said to be the ashes of the bloody apron (wawrish shamisharu tupuru) worn by a menstruating woman. This poison will cause the victim to vomit blood.

(b) The poisoner's finger nail, scraped fine and put in the drink, is regarded as a deadly poison for all persons except the administrator.

(c) Bottle glass pounded fine is a reliable method and is said, with good reason, to be the quickest of the poisons.

(d) The bones of any snake, burned or dried and subsequently powdered, are regarded as poisonous.

(e) Paito, a small fish which when burned gives a supposedly poisonous ash, is also administered in drink.

As might perhaps be expected, an antidote may be used for all of the above poisons with the exception of c. A tea is brewed from the leaf of a certain tree (muritchawa), which when imbibed causes vomiting. This brew must be made in secret in the afternoon, put out in the evening dew to cool, and must be drunk before retiring and immediately upon rising, so that vomiting takes place twice.

[1] This technique in poisoning is reported from several other Guiana tribes. See Roth, 1924, *An Introductory Study of the Arts, Crafts, and Customs*, pp. 562–564.

796 fishing is difficult. It is said that this ceremony also consists of
791 calling a spirit and making a sacrifice. Hunting difficulties are ameliorated by the piaiyen on an individual basis by curing bina trouble, which will be described shortly.

757 **Medicine.** Beside the cassava and fish ceremony it is said that the medicine man conducts no public ceremonials, the remainder of his activities being confined to services which he renders on request and payment by individuals. In the latter capacity he fulfills functions analogous to those of a physician. Among the matters in which his services are sought are prevention of infertility, prevention of conception, and curing of the following ailments: fever, headache, sores and ulcers, eye trouble, and, in some cases, stomach and respiratory troubles. All internal and organic complaints, however, are difficult for the piaiyen to treat. The piaiyen also acts as a diviner in cases where sickness is due to action by another piaiyen. (See section on Crime and Punishment.)

753 Practically all sickness, including reproductive maladjustment, is due to intervention by spirits. But only serious cases of illness are cured by medicine men. A large number of medicines concocted from materials in the bush are in use by laymen for self-treatment. There are also a number of older women who are noted for their knowledge of curing methods and who constitute a group of minor healers, who are consulted by laymen, usually before or, sometimes, coincidentally with treatment by a piaiyen. The use of material medicines is not inconsistent in Carib thought with the theory that disease is due to spiritual causes. It is believed that the application of medicine to a wound, for instance, is so unpleasant to the spirit which has caused the wound that it ceases its interference. The use of internal medicine acts in the same way, causing the interfering spirits to cease persecuting the patient. Cathartic pills and salts, for instance, are believed to loosen the grip which spirits have taken on the bowels. A partial list of native material substances and cures used in Carib lay-medicine follows.

757 *ara uri*, remedy for headache. Scrape bark, then wrap the bark in
278 any kind of leaf and soak it in water four to five days; then wash the entire head, including the hair, with the solution.

parawakasi (trysle, *Pentaclethra*), remedy for open cuts and sores; a dicotoledenous plant. The two halves of the old seed remain

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attached to the stem at the ground level of the young plant. These are scraped and the juice applied to the wound. Large plants are also used for their bark, which is scraped with a knife on the inner surface; the mash so obtained is squeezed onto ulcers and makes them heal.

saridori, remedy for intestinal worms. Leaf is boiled and the infusion drunk. Acts as cathartic.

warampyu mi'idi, for burns. Scrape the juice from the bark and put it on burns and scalds.

akorurari, leaf which is placed over all open sores and wounds to heal them. Applied like adhesive plaster. (cf. rede epityo.)

atupuran (kotopuran), leaf which is squeezed and pounded and forced into a deep bleeding cut. It makes the blood coagulate.

arawata andukuru (baboon tail). Cut bark, scrape inside bark, and apply to abscess to draw out inflamation.

kuraru. Take bark, scrape it, and shove the mash into the cavity of an aching tooth. Alec uses Capstan tobacco for the same purpose.

arawuni. The leaf is rubbed between the hands, and juice dropped in the eyes as a cure for sore eyes. Any kind of pepper leaf is also said to be efficacious for this purpose; the juice is put in the eyes.

akuri andopidi (accouri tail), small red vine. It burns the skin, and when used to tickle the nose, causes sneezing. It is used for head colds to "make the cold come out."

tobacco leaf. This is heated green over the fire, and the juice squeezed into the eye for headache and neuralgia. The treatment causes heavy flow of tears, smarting, and sneezing, but is said to draw the pain out of the head.

pakamu maituru (bitter tale), a vine leaf which is used to cause sweating. It is boiled and put under your hammock so that the steam rises up while you lie there wrapped in a blanket.

quinine bush. This is boiled and mixed with lime juice, and taken as an infusion. Alec once had fever for five days. Quinine bush was administered and the fever disappeared.

tumuka, a little bush which grows in old fields. It is boiled and taken as an infusion for stomach trouble. It acts as a cathartic.

koyuyaru, a green bush. The leaf is mascerated and put as a mash on a festering sore.

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rede epityo, a bush: boiled in water which is used to wash the wound; the leaf is put over the entire wound like a piece of court plaster.

kotupuron, bleeding. If you have an ache or pain in the arm, you make a shallow cut in the arm. It makes no difference which arm. Then you rub some of the leaf, called kotupurong, into the cut. As this cut heals, so will the trouble in the whole arm better itself.

anakoko, a plant having berries which are red on one side and black on the other. The bark of this plant is pounded and put in a pot with water. Stones are then heated and thrown into the water, and the whole thing is placed under the hammock of the sick person so that the steam rises around him.

kumishako, a worm which lives in the crecks, is used as a cure for snake bite. The worm is cut in half. The patient eats one half and rubs the other on the wound.

waiampata, leaf boiled to make tea, said to relieve stomachache.

otokau, juice taken from stem to make a drink "black man's tea," refreshing.

areku. Sap of the inner bark is made into an infusion used to wash the skin of children suffering from eruptions.

konosa. An infusion is made from the leaf and taken internally for stomach ache.

haisaiyundi. The root is boiled, and the infusion taken internally as a treatment for cough. The raw stem is also chewed as a remedy for cough.

akoyubori. The onion-like root is masserated and applied as a poultice to inflammations.

tiger teeth and hog teeth, as a cure for snake bite. The teeth are burned, and the ashes are mixed with water. Part of this mixture is imbibed and the rest rubbed on the wound.

snake eyes, as cure for snake bite. The eyes are pounded up and rubbed on the wound. This method of curing snake bite is regarded as first aid and is resorted to only if other methods are not available.

warakabra feathers, as cure for broken arm. Alec tells about Harrison, deceased, who had a compound fracture of the forearm. His mother put some kind of bark on it and burned warakabra feathers, which were tied on over the fracture. These warakabra feathers, are good for all fractures; their efficacy is con-

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nected with the fact that it is extremely difficult to break the bones of one of these birds. Unburned warakabra feathers are also put on sprains. A wound or a fracture heals very quickly in the warakabra bird.

milk of the swizzle stick bush (ukuyapo aru epukuru). This is put in the eyes if white matter is being discharged from them.

slate or shells, pulverized and mixed with water, are used for sore eyes. The solution is dropped into the eye. This is not universal.

river oyster or periwinkle. The water inside the shell of the mollusc is sometimes squeezed into the ear for earache. This custom is not, however universal.

Less beneficial than the foregoing remedies is the Carib practice of immersing oneself in cold river or creek water if one is suffering from fever.

If medicinal treatment alone is not sufficient to disperse the spirits which are causing the illness of a patient, the piaiyen is consulted, on the understanding that he will be recompensed according to the manner which he will specify. The first task of the consultant is to determine which spirits are causing the trouble. To this end he retires into his toakai, drinks tobacco water, smokes tobacco cigarettes, and thus induces a trance which results in communication with the spirits with whom he is in contact, a communication which is accompanied by song and the shaking of the maraka. He questions them one by one to see if any one of them is concerned with the case. If so, he asks it to desist. If not, he asks if they know which spirit is responsible, and upon discovering the responsible spirit tries to establish communication with it so that he can persuade it to desist. Once he has discovered which spirit is causing the trouble, he repairs to the side of the patient with a bowl of cassiri, which is administered to the sufferer. Then he takes up a watch over the patient, which is punctuated by songs imploring the spirit in the case to leave the patient alone and reciting to the spirit the fact that the patient has never wilfully committed an offense against it. All medicine men stoutly maintain that they use no medicinal constituents in the drink which is administered to the patient, but most laymen, on the contrary, believe that they mix with the drink certain medicines which may have a beneficial effect. Failure to cure an illness is laid by the practitioner to the intractability of the spirit

163 The number of children ever born range between four and seven to
*177 those women who are fifty-five or older. The range is eight to fourteen for the women between forty and fifty-four. In other words, the seven women fifty-five and older have had a total of thirty-seven children of which thirty survived to adulthood. To date, the seven women forty to fifty-four have had a total of eighty-one children of which sixty-five survive. And some women in this younger age group have not ceased reproducing. The women in this category are subdivided into those forty to forty-four and those forty-five to fifty-four so that further reproductive potential is evident. The average is 5.3 children ever born with 4.3 surviving to adulthood for the women fifty-five and older. For the women forty to fifty-four, the average is 11.6 children ever born with 9.3 surviving. This is more than a doubling of the number of births as well as those children surviving.

The 1960 Government census provides a check on the age group of women fifty-five and older. At that time, these women were forty-five and older. Birth records collected at that time are reported in Table 11. The same pattern of a greater number of births to younger women is apparent.

842 Concerning a popular knowledge of contraception, ignorance for
[887] the most part is expressed by both men and women. It is known that
[278] older women can identify a small leaf and a vine which boiled together and administered as a drink is supposed to render a woman permanently
847 sterile. No one is reported to have used this measure. An effective method, infanticide, is practiced.[16] This may occur with a young

[TEXT CONTINUED ON PAGE 71]